Economics Information

Ontario

ESTIMATED COST OF GROWING WHITE BEANS, 1982

BY

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INTRODUCTION

This report provides an estimate of the costs of growing white beans in Ontario for 1982. The cost estimates are based on technical coefficients derived mainly from a 1975 survey of white bean producers and a partial survey conducted in 1978. The technical coefficients include such items as rates of accomplishing specified field operations as well as factors used to calculate machinery and labor costs. Also included are quantities of fertilizer, sprays and other materials used. 1982 cost estimates are derived by applying current input prices to the technical coefficients.

All costs are computed by means of the ACRES (Agricultural Crop Enterprise System) program. The ACRES program is a budget generating computer program written in Fortran. The following paragraphs serve to illustrate the methods of handling costs.

METHODS USED IN UPDATING COSTS

MACHINERY

Machine data was taken from the 1975 study and represents in terms of kind, new cost, age, size, and hours of use a line of equipment owned by bean producers. Costs for 1982 were established by assigning an updated purchase price to each machine, while keeping the age, size and hours of use constant; new purchase prices were developed by means of the Ontario Farm Input Price Index. Annual costs were estimated in the following manner.

1. Depreciation was calculated by the declining balance method at the rate of 15 percent per annum for powered machines and 10 percent for others.

2. Interest on investment was calculated on the depreciated value of each machine. For machines fully depreciated interest was charged on the established present value. Growers were assumed to have a 70 percent ownership in all equipment. Interest on debt and equity were calculated as follows:

Equity portion:	11.67 percent, the average rate paid by chartered banks in Canada on deposit accounts for 1982.
Debt portion:	17.43 percent, consisting of the average prime lending rate in Canada for 1982 of 15.93 plus 1.5 percent.

3. Housing and insurance were calculated at the rate of 2 percent of the remaining value.

4. Repairs and maintenance were based on various engineering formulas and included age, new costs, and hours of use.

5. Fuel costs were determined on the basis of 33.2 cents per litre for gasoline and 34.2 cents per litre for diesel.

6. Hourly rates based on the above factors were estimated for each machine and then used to establish machinery costs for each field operation.

LABOR

Labor requirements are based on the 1975 study and represent the amount of time required to perform typical field operations. For 1982 a value of $6.25 per hour was assigned to operator labor and $6.00, including fringe benefits, was assigned to hired labor.

MATERIALS

Quantities of seed, fertilizer, and sprays are based on the 1975 study and a 1978 survey of materials used by white bean producers. They are representative of actual quantities used and prices paid in 1982.

LAND

Land values are based on recent values of farm land for the main white bean producing counties of Ontario. The interest rate applied in this report was the average lending rate charged by the Farm Credit Corporation for 1982 at 16.22 percent discounted for the rate of inflation as outlined in a recent Economics Branch report[1], resulting in a rate of 6.5 percent.

MANAGEMENT FEE

An allowance for management was calculated at the rate of 5 percent of the gross returns. Gross returns are estimated by multiplying current yields by current prices.

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[1]Gordon Framst, A Method for Determining Enterprise Land Costs (Toronto: Economics Branch, Ontario Ministry of Agriculture and Food, 1981).

INTEREST ON OPERATING CAPITAL

Interest on operating capital was charged to the white bean crop at the rate of 17.43 percent per annum for a period of six months. This represents a charge of 1.5 percent over the weighted prime interest rate in Canada of 15.93 percent for 1982. Inputs considered for operating capital were hired labor, materials, custom work, and fuel for farm machinery and trucks to the end of the preharvest period.

OTHER COSTS

Other costs, sometimes referred to as cash overhead are calculated at the rate of 4.5 percent of machinery, labor, materials and service costs. Included in this category are items such as telephone, electricity, accounting fees, subscriptions, fence repairs and general insurance.

Table 1.--Summary of Estimated Costs and Returns: White Beans, 1982

	Per acre	Per hectare	Per cwt.[a]
		dollars	
Cash costs			
Tractor operating.....	18.50	45.72	1.42
Implement operating	3.89	9.61	0.30
Materials and custom ...	105.86	261.59	8.14
Hired labor	3.97	9.81	0.31
Cash overhead[b]	36.09	89.18	2.78
Total	168.31	415.91	12.95
Non-cash costs			
Depreciation	33.08	81.74	2.54
Interest on investment .	127.01	313.85	9.77
Operator labor	15.87	39.22	1.22
Management allowance ...	7.77	19.20	0.60
Total	183.73	454.01	14.13
Expected gross returns ...	155.48	384.21	11.96
Cash costs	168.31	415.91	12.95
Return over cash costs ...	- 12.83	- 31.70	- 0.99
Total production costs ...	352.04	869.92	27.08
Fixed costs[c]	198.29	489.99	15.25
Operating costs[d]	153.75	379.93	11.83
Gross margin	1.73	4.27	0.13

[a]Based on an average 1982 yield of 13 cwt. per acre.

[b]Includes utilities, crop insurance, marketing board fees, interest on operating capital and taxes.

[c]Includes operator labor, management allowance, depreciation, interest on investment, taxes, utilities, insurance, and interest on operating capital.

[d]Cash costs less taxes, utilities, and insurance.

Table 2.—Estimated Machinery and Labor Costs: White Beans, 1982

Operation	Times over	Tractors		Machinery		Labor
		Fixed	Variable	Fixed	Variable	
	no.	dollars per acre				hours/ acre
PREHARVEST						
Plow	1	7.10	4.09	4.35	1.08	0.50
Field cultivate	3	6.39	3.69	1.65	0.35	0.45
Spray herbicide	1	2.02	0.94	1.31	0.26	0.20
Incorporate herbicide	1	2.13	1.23	0.55	0.12	0.15
Haul seed & fertilizer	1	0.81	0.38	0.08	0.01	0.08
Plant	1	3.04	1.41	5.15	0.85	0.30
Pick stones	1	2.23	1.03	0.22	0.03	0.45
Row cultivate	2	6.07	2.82	4.34	0.58	0.60
Spray herbicide	1	2.84	1.64	1.31	0.26	0.20
Total		32.63	17.23	18.96	3.54	2.93
HARVESTING						
Pull & windrow	1	2.73	1.27	3.39	0.35	0.27
Combine[a]	1				23.40	
Haul to elevator[a]	1				3.69	
Total		2.73	1.27	3.39	27.43	0.27
TOTAL MACHINERY COST & LABOR HOURS		35.36	18.50	22.35	30.98	3.2
LABOR COSTS						$/acre
Operator, (2.54 hours @ $6.25)						15.87
Hired[b], (0.66 hours @ $6.00)						3.97

[a] Custom.

[b] Includes benefits.

Table 3.--Estimated Material Costs and Rates: White Beans, 1982

Item	Rate	Unit	Price, $	$/acre
SEED				
Certified & treated	40	lb.	42.50/cwt.	17.00
FERTILIZER				
8-32-16	200	lb.	286/tonne	25.94
Ammonium nitrate[a]	36	lb.	250/tonne	0.49
Total				26.43
SPRAYS				
Herbicide, preplant	1.82	litre	13.00/L	23.66
Herbicide, pre-emerge ...	1.5	lb.	5.95/lb.	8.92
Fungicide[b]	0.68	kg	40.55/kg	2.76
Total				35.34
TOTAL MATERIALS				78.77

[a] Assume that nitrogen is applied to 10 percent of the crop.

[b] Assume that fungicide is applied to 12 percent of the crop.

Table 4.--Other Estimated Costs: White Beans, 1982

Item	$/acre
Land	
Interest, $1,575/acre @ 6.5%	102.37
Taxes, $4.75/acre	4.75
Total	107.12
Other costs:	
Utilities & insurance	9.95
Marketing board fees @ 17¢ per cwt.	2.25
Crop insurance	10.00
Total	22.20
Management fee	7.77
Interest on operating capital	9.14
TOTAL	146.23

Table 5.--Equipment Used on White Beans, 1982

Machinery	Size	Purchase price	Age	Annual use	Cost
		dollars	years	hours	$/hour
Tractor	70 HP	25,000	2	430	22.39
Tractor	40 HP	12,500	3	260	14.82
Plow	4 fur	4,500	5	85	10.87
Field cultivator	14 ft.	1,620	4	80	4.44
Sprayer	200 gal.	1,590	5	40	7.87
Planter	4 row	5,700	4	60	20.03
Row cultivator	4 row	2,000	4	50	8.19
Bean puller		1,310	8	35	5.33
Bean windrower		2,000	7	35	8.48
Combine		71,000	7	90	145.70
Wagon, trail type		655	15	45	1.15
Wagon, with V box		1,290	5	50	4.51

The following operations were performed on the white bean crop.

PREHARVEST OPERATIONS

1. Plowing.
2. Field cultivating, 3 times.
3. Spraying a preplant herbicide.
4. Incorporating.
5. Hauling seed and fertilizer.
6. Planting.
7. Picking stones.
8. Row cultivating: twice over.
9. Spraying a pre-emerge.

HARVEST OPERATIONS

1. Pulling and windrowing.
2. Combining.
3. Hauling to elevator.

Material costs and rates of application are given in Table 3. The following quantities were used on a per acre basis.

1. Seed - 40 pounds.
2. Fertilizer - 200 pounds of 8-32-16; and 36 pounds of ammonium nitrate applied to 10 percent of the acreage.
3. Herbicide - one application of treflan (0.3 gallons) or one application of Eptam (0.4 gallons) applied before planting, plus one application of patoran at the rate of 1.5 pounds applied after planting.
4. Fungicide - one application of Benlate, at the rate of 1.5 pounds, applied to 12 percent of the acreage.